

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-230221

(43)Date of publication of application : 05.09.1997

t.Cl.

G02B 7/198

Application number : 08-031596

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Date of filing : 20.02.1996

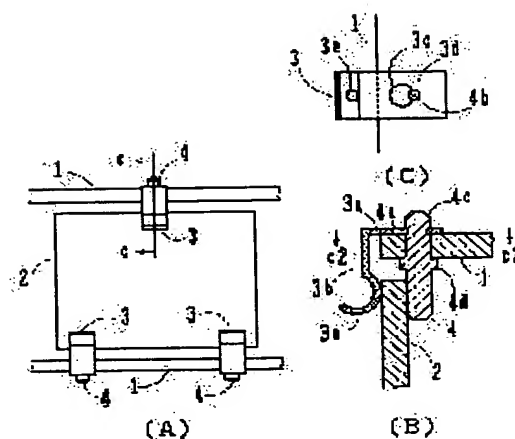
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## MIRROR HOLDING STRUCTURE

Abstract:

PROBLEM TO BE SOLVED: To provide holding technique facilitating adjustment without applying stress to a mirror.

SOLUTION: In the case of holding the mirror 2 in the chassis 1 of a liquid crystal projector, a pin 4 is erected on the chassis, the mirror 2 is brought into contact with the side surface of the pin 4 and held and fixed by an L-shaped metal fitting 3. The side surface of the metal fitting 3 is formed in a nearly L-shaped and a hole 3d is opened at one end 3a. The metal fitting 3 is fit in a groove 4a provided on the outer periphery of the pin 4 and pivotally attached so as to freely turn with the shaft of the pin 4 as required.



## LEGAL STATUS

Date of request for examination]

29.01.2001

Date of sending the examiner's decision of rejection]

Date of final disposal of application other than the examiner's decision of rejection or application converted to a patent]

Date of final disposal for application]

Patent number]

Date of registration]

Number of appeal against examiner's decision of rejection]

Date of requesting appeal against examiner's decision of rejection]

Date of extinction of right]

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<http://www19.ipdl.ipo.go.jp/PA1/result/detail/main/wAAAtxaazlDA409230221P1.htm>

8/2/2004

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 IMS
 

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m(s)]

m 1] It is the maintenance structure of the mirror which made said fixing metal the letter of the abbreviation for L  
 cters in the mirror maintenance structure of holding said mirror in a fixed location with the fixing metal which said  
 r is contacted on the side face of an approximate circle column-like pin and this pin in which a mirror is  
 ioned, and is pinched, and was characterized by fixing a said L character-like end to revolve free [ rotation ]  
 ring on the shaft of said pin.

m 2] Maintenance structure of the mirror according to claim 1 characterized by attaching outside said slot the inner  
 mference of the hole which established the shaft of this pin, and the slot of the direction of a right angle in the  
 hery of the part which fixes the fixing metal of said pin to revolve, and carried out opening to the fixing-with-a-  
 le part of this fixing metal.

m 3] The hole which carried out opening to said fixing metal is the maintenance structure of the mirror according  
 im 2 characterized by consisting of a hole which has the outer diameter of the pars basilaris ossis occipitalis of the  
 established in the place distant from the hole which has the outer diameter which can penetrate said pin which  
 ed out opening to the place near a mirror, and the mirror connected with this hole at the periphery of said pin which  
 ed out opening, and the bore of abbreviation identitas.

m 4] Said fixing metal is claim 1 characterized by constituting from a flat spring, and the maintenance structure of  
 ror according to claim 2 or 3.

m 5] The ingredient of fixing metal is the maintenance structure of the mirror according to claim 4 characterized by  
 dering as phosphor bronze.

m 6] The side face at the tip which pinches the mirror of a flat spring is the maintenance structure of the mirror  
 ding to claim 4 which considered as the shape of upper limit of the abbreviation for 2 characters, and was  
 icterized by preparing opening in the top-face part.

m 7] Said pin is the maintenance structure of the mirror according to claim 1 characterized by pressing fit and  
 hing in the hole which carried out opening to the chassis which attaches said mirror.

m 8] Said pin is the maintenance structure of the mirror according to claim 1 which carried out to three and was  
 icterized by holding three points of said mirror.

m 9] The pin of said approximate circle pilaster is the maintenance structure of the mirror according to claim 1  
 icterized by considering as the slack type which makes the part which said mirror contacts the maximum outer  
 eter.

m 10] The pin of said approximate circle pilaster is the maintenance structure of the mirror according to claim 1  
 icterized by preparing the heights which have the spherical surface into the part which said mirror contacts.

m 11] Said fixing metal is the maintenance structure of the mirror according to claim 9 or 10 characterized by a  
 or considering as an abbreviation flat surface in near in contact with a pin.

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## FILED DESCRIPTION

iled Description of the Invention]

]

1 of the Invention] This invention relates to the maintenance structure of a mirror [ side / by the maintenance used  
liquid crystal projector etc. / mirror ] with little distortion.

2]

ription of the Prior Art] Drawing 4 is the (A) front view of one example of the maintenance structure of the  
entional mirror, the (B) side elevation (this drawing c-c enlarged section), and the (C) top view. When holding a  
r 42 on the chassis 41, such as a liquid crystal projector, pin 41a is stood to a chassis inside, a mirror 42 is  
cted on the side face of this pin, and it inserts and stops with fixing metal 43. Fixing metal 43 is fixed on the  
is 41 in the screw 45 grade. However, with such structure, when attaching fixing metal with a screw 45, in order to  
ve the turning effort to the hand of cut of a screw in the fixing metal itself, there is a possibility that it may be  
ult to make the contact section with the mirror 42 of fixing metal 43 in agreement with the field of a mirror 42,  
may be applied to a mirror, and distortion may occur. Moreover, there is also a problem of taking the time and  
t which carries out the screw stop of the fixing metal 43.

3]

blem(s) to be Solved by the Invention] This invention aims at not having been made in view of the above-  
ioned trouble, and not applying stress to a mirror, and offering the maintenance technique of the easy mirror of  
lation.

4]

ns for Solving the Problem] Since fixing metal rotates centering on a pin according to the direction of the field of a  
r by standing a pin inside chassis, such as a liquid crystal projector, and attaching the fixing metal stopped on both  
of a mirror free [ rotation ] centering on the shaft of said pin between the side faces of this pin, in order that the  
ct section with the mirror side of fixing metal may contact a mirror side by the uniform force in accordance with a  
r side easily, the stress concerning a mirror becomes small. Moreover, distortion of the mirror side which the part  
e fixing metal pinches a pin and a mirror always serves as a pin and the minimum distance, the impossible stress to  
ror serves as min since the power point which pinches the mirror of fixing metal and a pin is in agreement,  
fore is produced for attachment can be pressed down to min.

5]

odiment of the Invention] In the mirror maintenance structure of holding said mirror in a fixed location with the  
g metal which said mirror is contacted on the side face of an approximate circle column-like pin and this pin in  
h a mirror is positioned, and is pinched, said fixing metal is made into the letter of the abbreviation for L  
acters, and fixes a said L character-like end to revolve free [ rotation ] centering on the shaft of said pin.

5] The shaft of this pin and the slot of the direction of a right angle are established in the periphery of the part  
h fixes the fixing metal of a pin to revolve, and the inner circumference of the hole which carried out opening to the  
g-with-a-spindle part of this fixing metal is attached outside said slot.

7] Let the hole which carried out opening to fixing metal be the hole of the Dharma mold which consists of a hole  
h has the outer diameter of the pars basilaris ossis occipitalis of the slot established in the place distant from the  
which has the outer diameter which can penetrate said pin which carried out opening to the place near a mirror, and  
irror connected with this hole at the periphery of said pin which carried out opening, and the bore of abbreviation  
itas.

8] Fixing metal consists of flat springs. Moreover, let the ingredient of fixing metal be phosphor bronze.

9] The side face at the tip which pinches the mirror of a flat spring is made into the shape of upper limit of the

eviation for 2 characters, and prepares opening in the top-face part.

0] A pin is pressed fit and attached in the hole which carried out opening to the chassis which attaches said mirror. Moreover, a pin is made into three and holds said mirror by three points.

1] The pin of an approximate circle pilaster swells the part which said mirror contacts, and uses it as a slack type which the part serves as the maximum outer diameter. Or the heights which have the spherical surface into the part in which the mirror of a pin contacts are prepared.

2] It is made for fixing metal to become an abbreviation flat surface in near where a mirror contacts a slack type or pin of the spherical surface.

3]

Example] Hereafter, the maintenance structure of the mirror of this invention is explained using a drawing. Drawing 1 is (A) front view of one example of the mirror maintenance structure by this invention, the (B) side elevation (this being c-c enlarged section), and the (C) top view (said drawing c2-c2 cross section). When holding a mirror 2 on the chassis 1, such as a liquid crystal projector, a pin 4 is stood to a chassis, a mirror 2 is contacted on the side face of this and it inserts and stops with fixing metal 3. The side face of fixing metal 3 is made into an abbreviation L typeface, as 3d of holes in end 3a, inserts them in slot 4a prepared in the periphery of a pin 4, and is fixed to revolve free rotation centering on the shaft of a pin 4.

4] The hole made in end 3a of fixing metal 3 is equal to the periphery of pars-basilaris-ossis-occipitalis 4b of slot 4a which carried out opening of the hole 3c of the magnitude which can penetrate head 4c of a pin 4 to the place near a mirror 2, connected with hole 3c, and the bore prepared in the place distant from a mirror 2 at the periphery of a pin 4, prepares 3d of slightly large holes. Holes 3c and 3d connect and a Dharma mold is constituted. Fixing metal is held in a pin 4 by one-touch by penetrating hole 3c of fixing metal 3 to head 4c of a pin 4, and inserting 3d of holes at 4a from an outside.

5] In addition, fixing metal 3 is constituting from a flat spring which consists of an ingredient which has elasticity, as phosphor bronze, and can hold a mirror 2 with a sufficient precision.

6] The side face of other end 3b of the fixing metal 3 of L typeface is made into the same configuration as the upper of 2 characters, and when preparing hole 3e in the part equivalent to the top face and attaching a mirror 2, it is made the structure which hangs the tip of KIRI etc. on hole 3e, opens a spring, and is stopped on both sides of a mirror 2 between pins 4.

7] Head 4c and 4d of flanges are prepared in the pin 4, and a pin 4 can stop even 4d even of flanges with a sufficient location precision for head 4c of a pin 4 easily to a chassis 1 by pressing fit and stopping in the hole made in chassis 1.

8] In the (A) front view of drawing 1, the pins 4, 4, and 4 which become fixing metal 3, 3, and 3, and it and a group are formed 3 sets respectively, and can consider a mirror 2 as three-point support at a chassis 1.

9] Drawing 2 is the important section sectional view of other examples of the maintenance structure of the mirror of invention. When holding a mirror 22 on the chassis 21, such as a liquid crystal projector, a pin 24 is stood to a chassis, a mirror 22 is contacted on the side face of this pin, and it inserts and stops with fixing metal 23. In this example, partial 24a in contact with the mirror of a pin 24 is swollen, and the shape of slack has been carried out.

0] Drawing 3 is the important section sectional view of another example of the maintenance structure of the mirror of invention. When holding a mirror 32 on the chassis 31, such as a liquid crystal projector, a pin 34 is stood to a chassis, a mirror 32 is contacted on the side face of this pin, and it inserts and stops with fixing metal 33. In this example, heights 34a of an abbreviation globular form is prepared in the part in contact with the mirror of a pin 34. Moreover, fixing metal 33 is made into the structure of having flat-surface section 33b near [ where a mirror 32 contacts 34 ] the part.

1]

Effect of the Invention] This invention is carried out with a gestalt which was explained above, and does so effectiveness which is indicated below.

2] In the mirror maintenance structure of holding said mirror in a fixed location with the fixing metal which said mirror is contacted on the side face of an approximate circle column-like pin and this pin in which a mirror is positioned, and is pinched Said fixing metal is made into the letter of the abbreviation for L characters, it is fixing a said character-like end to revolve free [ rotation ] centering on the shaft of said pin, and in order that the contact section the mirror side of fixing metal may contact a mirror side by the uniform force in accordance with a mirror side by, the stress concerning a mirror becomes small. Moreover, distortion of the mirror side which the part where fixing 1 pinches a pin and a mirror always serves as a pin and the minimum distance, the stress of a mirror serves as minimum. the power point which pinches the mirror of fixing metal and a pin is in agreement, therefore is produced for

hment can be pressed down to min.

3] The shaft of this pin and the slot of the direction of a right angle are established in the periphery of the part h fixes the fixing metal of a pin to revolve, and fixing metal can be attached in it without a screw free [ rotation ] rring on the shaft of a pin by one-touch by attaching outside said slot the inner circumference of the hole which ed out opening to the fixing-with-a-spindle part of this fixing metal.

4] A hole [ having carried out opening to fixing metal ] can make it structure [ not separating easy ], once attach g metal easy and it attached by considering as the hole of a Dharma [ consisting of a hole / having the outer eter of the pars basilaris ossis occipitalis of a slot / having prepared in the place near a mirror at the periphery of pin / having carried out opening to a place distant from a mirror / connecting with a hole / having an outer eter / that said pin / having carried out opening / can penetrate / and this hole /, and the bore of abbreviation itas ] mold.

5] Fixing metal is constituting from a flat spring which consists of phosphor bronze etc., and can pinch a mirror a sufficient precision between pins.

6] The side face at the tip which pinches the mirror of a flat spring is made into the shape of upper limit of the eviation for 2 characters, it is preparing opening in the top-face part, and it becomes easy for a mirror to attach it.

7] A pin is pressing fit and attaching in the hole which carried out opening to the chassis which attaches said mirror, a pin is attached in it with a sufficient location precision to a chassis. Furthermore, a pin is made into three, and it is ing said mirror by three points, and the field location of a mirror is determined as one and it is held at stability.

8] The pin of an approximate circle pilaster swells the part which said mirror contacts, and uses it as a slack type which the part serves as the maximum outer diameter. Or the stress to the mirror by the error of the location ision of the shaft orientations of a pin is absorbable by preparing the heights which have the spherical surface into part which the mirror of a pin contacts.

9] Fixing metal is making it a mirror become an abbreviation flat surface in near in contact with a slack type or the of the spherical surface, and can cover gap of the power point of fixing metal and the mirror of a pin which contacts.

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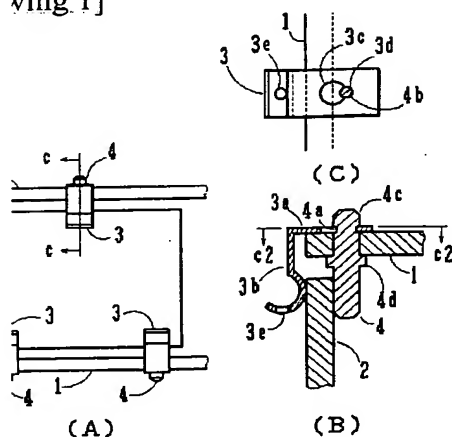
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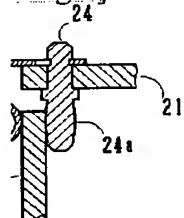
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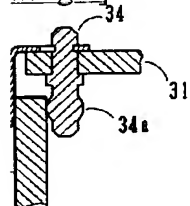
wing 1]



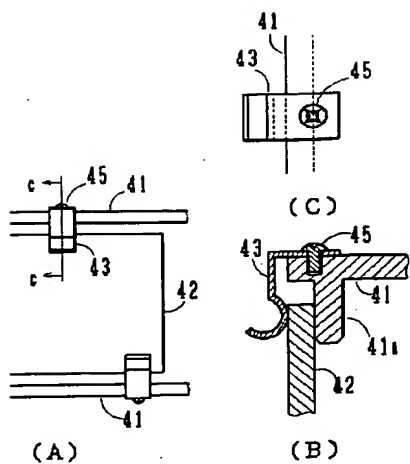
wing 2]



wing 3]



wing 4]



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